We claim:

1. In a communication system having a sending station for sending data upon a communication channel, the communication channel susceptible to fading, an improvement of apparatus for the sending station for converting the data into a form to facilitate communication thereof upon the communication channel, said apparatus comprising:

a multi-dimensional trellis-coded modulator coupled to receive indications of the data to be sent by the sending station, said multi-dimensional trellis-coded modulator for forming N-dimensional, trellis-encoded sequences therefrom;

a first transmit antenna and at least a second transmit antenna coupled to said multi-dimensional, trellis-coded modulator, a first N-dimensional sequence transduced by said first transmit antenna and a second N-dimensional transmit antenna transduced by said second transmit antenna, the first and second N-dimensional sequences exhibiting orthogonal transmit diversity.

2. The apparatus of claim 1 wherein said multi-dimensional trellis-coded modulator convolutionally encodes the data and maps the data, once encoded, to a signal constellation.

3. The apparatus of claim 2 wherein the signal constellation into which the data, once encoded, is mapped is positioned into subsets of selected minimum squared distances.

4. The apparatus of claim 3 wherein convolutional encoding of the data is effectuated according to a rule of correspondence.

5. The apparatus of claim 4 wherein the rule of correspondence comprising defining intersubset transitions to correspond to shorter-than-average length transitions.

6. The apparatus of claim 4 wherein the rule of correspondence comprises defining intrasubset transitions to correspond to longer-than-average transitions.

7. The apparatus of claim 1 wherein the multi-dimensional trellis-coded modulator utilizes a Wei construction.

8. The apparatus of claim 1 wherein the first and second N-dimensional sequences applied to said first and second transmit antennas, respectively, comprise Radon-Hurwitz transforms.

9. The apparatus of claim 1 further comprising a mapper coupled between said multi-dimensional trellis codes and said first and at least second transmit antennas, said mapper for mapping OFDM (Orthogonal Frequency Division Multiplexer) symbols to said first and second transmit antennas.

10. In the communication system of claim wherein the data sent upon the communication channel is received at a receiving station, a further improvement of apparatus for the receiver for operating upon the data once received thereat, said apparatus comprising:

a demodulator coupled to receive indications of the data received at the receiving station, said demodulator for demodulating the indications to form separate sequences, the separate sequences used to estimate symbol values.

11. The apparatus of claim 1 wherein the communication system forms a WLAN (Wireless Local Area Network) having an access point and wherein said multi-dimensional trellis-coded modulator and said first and second transmit antennas form portions of the access point.

12. The apparatus of claim 11 wherein the data communicated by said first and second transmit antennas is communicated at a rate specified by an IEEE 802.11 standard.

13. In a method for communicating in a communication system having a sending station for sending data upon a communication channel, the communication channel susceptible to fading, an improvement of a method for converting the data into a form to facilitate communication thereof upon the communication channel, said method comprising:

modulating the data to be communicated upon the communication channel to form N-dimensional, trellis-encoded sequences therefrom; and

applying a first N-dimensional trellis-encoded sequence formed during said operation of modulating to a first transmit antenna and at least a second N-dimensional trellis-encoded sequence formed during said operation of modulating to at least a second transmit antenna, the first and second N-dimensional trellis-encoded sequences exhibiting orthogonal transmit diversity.

14. The method of claim 13 wherein said operation of modulating comprises convolutionally encoding the data into encoded form.

15. The method of claim 14 wherein said operation of modulating further comprises mapping the data, once encoded, to a signal constellation, the signal constellation defining an allowable symbol set.

16. The method of claim 15 wherein the symbol set to which the data, once encoded, is mapped during said operation of mapping is positioned into subsets of selected minimum squared distances.

17. The method of claim 16 wherein said operation of encoding the data is effectuated according to a rule of correspondence.

18. The method of claim 13 wherein the first and second N-dimensional sequences applied to the first and second transmit antennas, respectively, comprise Radon-Harwitz transforms.

19. The method of claim 13 wherein the communication system comprises a WLAN (Wireless Local Area Network) having an access point and wherein said operations of modulating and applying are performed at the access point.

20. The method of claim 19 wherein the first and second N-dimensional trellis-encoded sequences are applied during said operation of applying at rates specified pursuant to an IEEE 802.11 standard.